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ABSTRACT

A screening procedure for the identification of potentially gifted kindergarten children was developed and tested with 350 students in rural Pennsylvania during the 1977-1978 school year. The screening procedure used the Slosson Drawing Coordination Test, the Boehm Test of Basic Concepts, the Draw-A-Man Test, and a teacher checklist. A total of 52 students were selected for individual evaluation based on the initial screening. The screening procedure was found to be useful in identifying children who were later found to be gifted, while teacher opinion alone was found to be inaccurate in identifying gifted children. (Author/DLS)

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A Kindergarten Screening Procedure for the Identification of Potentially Exceptional Children

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[1] Paper presented at the 26th annual convention of the National Association for Gifted Children, Baltimore, MD, October 20, 1979

Abstract

Gifted education is in the limelight of special education today, but, there is a sparsity of research available on screening kindergarten classes for potentially gifted children. The authors have developed a screening procedure based on past research and their own experience. Three school districts in Appalachia Intermediate Unit 08, which consists of 4 rural counties in South Central Pennsylvania, were chosen for trial of the screening procedure. During the 1977-78 school year 350 kindergarten students were screened, and 52 were evaluated individually. The Slosson Drawing Coordination Test, the Boehm Test of Basic Concepts, Draw-A-Man Test, and a Teacher Checklist, were chosen because of their case of administration and subsequent review by the authors. Strict criteria were set to determine those students to be individually evaluated, and other students were tested on teacher opinions as "test cases". The screening procedure was found to be useful in identifying those children who later were found to be gifted. Teacher opinion alone was found to be woefully inaccurate in identifying gifted children. Results of this procedure for the 1978-79 school year are also discussed with additional implications for "at risk" children.

A KINDERGARTEN SCREENING PROCEDURE for the IDENTIFICATION OF POTENTIALLY GIFTED CHILDREN

INTRODUCTION

As the regular education teacher become increasingly aware of the characteristics of exceptional children, the school psychologist's referral load becomes larger. In addition to other programs for exceptional children, school districts throughout the state of Pennsylvania are developing Gifted Education Programs. In those districts where programs already existed, there is a trend toward a downward extention of those programs. For example, districts maintaining Gifted Programs in third or fourth grade, are now screening kindergartens for the initiation of primary Gifted Programs.

Although collegiate and local in-service programs have trained teachers to recognize the characteristics of handicapped children, teachers are now being asked to recognize their mentally advanced students, for which they have had limited training. Wallace (1965), Jacobs (1971) and Ryan (1975) reported that kindergarten teachers are woefully inaccurate in recognizing those children whose intellectual talents can be identified with intelligence tests. Quattrocki (1974) reported that a teacher's ability to recognize creative potential in young children seems to be enhanced by training in early childhood education but that some trained teachers do not recognize creativity in students with as much or more accuracy than their untrained counterparts. The widespread use of teacher recommendation takes place despite a large body of research (Barbe 1964; Jacobs, 1971, Pegnato & Birch, 1959), which indicates that it not only fails to locate a significant proportion of the gifted population but consistently results in a large number of "false positives" being referred for final individual testing.

However, a smaller group of recent studies (Keogh, Smith, 1970; Stevenson, Parker, Wilkenson, Hegion, & Fish, 1976; Borland, 1978), has offered evidence that teachers can be highly accurate predictors of children's academic performance. A "directive" approach using a teacher rating of behaviors was suggested by Borland (1978) as a means of increasing efficiency of teacher selection. In the study by Stevenson et al (1976), teacher ratings made in kindergarten had correlations of "about .50" with reading and arithmetic achievement four years later, while stability correlations for achievement in these areas were .55 and .50 respectively over the same period. In other words, given the stability of the children's achievement, the teachers ratings predicted as well as could be expected. Even with these new trends, the questions regarding efficiency, usefulness, and stability of teacher recommendations continue.

In reviewing literature related to Early Childhood Educational programs, Dr. Benjamin Bloom's research is widely accepted. He concludes that an individual develops 50% of his mature intelligence between conception and the age of 4; from age 4 to year 8 he develops an additional 30%; and, from age 8 to age 17, the remaining 20% is developed.

Most of the current approaches to identifying gifted children rely on Lewis Terman's conception of intellectual giftedness (1925, 1947, 1959). Accordingly, certain individuals possess a general superiority in intellectual potential. This superiority is most reliably indicated by a high I.Q. Other practioners, theorists, and researches argue that intellectual giftedness can also be inferred on the basis of behaviors such as superior leadership, creative talent, etc. These diverse talents, while valued in themselves, have become accepted as a "syndrome" entity of giftedness (see e.g. Pennsylvania,

Department of Education, 1973).

Appalachia Intermediate Unit 08 complies with the Pennsylvania State's Standards for identifying children as Gifted. This standard is as follows:

> Outstanding intellectual and creative ability the development of which requires special activities or services not ordinarily provided in the regular program. Persons shall be assigned to a program for the gifted when they have an I.Q. of 130 or higher. A limited number of persons with I.Q. scores lower than 130 may be admitted to gifted programs when other educational criteria in the profile of the person strongly indicate gifted ability (Pennsylvania Bulletin, Vol. 7, NO. 40 Saturday, October 1, 1977).

In many school districts throughout the Appalachia Intermediate Unit 08, the percentage of children referred as potentially gifted appears inordinately high. Reasons for this vary, but a few include a teacher's idea of "I don't want to miss anyone", or "I'm just curious". A screening procedure relieves the burden of identification from school district personnel, and removes subjectivity from the decision making process. Additionally, an efficient screening procedure will enable the school psychologist to make more effective use of his time by increasing "hit rate".

In reviewing the past research on screening instruments for identifying potentially gifted kindergarten children, there are few articles. Davis and Hersh (1978) report on using the VANE Full Scale I.Q. of 140 as a cut off due to their feeling "that it is more important to make more false negative than false positive decisions in placement". Sutherland and Goldschmid (1974) and Jacobs (1970) would disagree with the above, suggesting that the truly superior child, who is perceived by his or her teacher as having only average intelligence, declines in intelligence test performance relative to the equally superior child whose abilities are indeed recognized by the teacher.

Research on creativity in preschool children seems to have better documentation than other areas of giftedness. For one thing, early childhood educators have the research of Torrance (1969) to review. Starkweather (1964, 1966, and 1971) has been researching various methods to assess creativity in preschool children for the past two decades. Leithwood (1971) has studied the relationship among motor skills, cognitive development, and psychological adjustment with 4-year-old nursery school children.

During the 1975-76 school year, the senior author had the experience of testing children in six kindergarten classes in a rural Pennsylvania school district. During that process the need for the availability of more information on five and six year old potentially gifted children became apparent. This lack of information was highlighted since most screening programs for the gifted rely primarily on group intelligence test scores, standardized test results, reading grade level, etc. which are limited sources of information. As an additional limitation, the kindergarten child has not yet been exposed to the rigors of group testing.

Since this was the first time the kindergarten classes were screened, the teachers were provided a pamphlet entitled "A Guide for Parents," developed by Mr. Randall Manning, Supervisor of Gifted Programs for Appalachia Intermediate Unit 08. In this pamphlet, Manning talks about the general characteristics of gifted children and provides a list of "some learning characteristics of gifted children" (Seagoe, 1974). Subsequently, each teacher filled out a referral on each child to be tested.

Each child referred was administered the Stanford-Binet Intelligence Scale, Form L-M (Terman and Merrill, 1973). Subsequently, the Fisher Exact

Probability Test (Siegel, 1956) was utilized on each item of the Stanford-Binet in order to identify significant differences ($P < .05$) of correct responses between the gifted and non-gifted samples. Three items were found to be significant. At the VII year level, Copying a Diamond, at the VII year level Verbal Absurdities I, and also at the VII year level, Days of the Week, were found to be significant. Thus, the results indicates that the gifted kindergarten child typically demonstrates 1). advanced visual perception and fine motor coordination, 2). advanced abstract thinking ability, and 3). advanced conceptual knowledge (Herdman, 1977).

During the year following this screening, much thought and planning went into improving the referral process. Districts throughout the Intermediate Unit were referring a high percentage of children as potentially gifted and school psychologists were evaluating many children with average or high average ability. For example, in the district where the kindergarten screening program took place, 39% (42 of 108) of the kindergarten children were referred as potentially gifted. Of those referred, 21% (9 of 42) earned an I.Q. of 130 or greater. Thus, this psychologist evaluated 5 children in order to identify 1 gifted child. Administrators and psychologists alike felt that the effort spent was not a beneficial utilization of the school psychologist's time. Ideally, it would be expected that 1 in 2 children evaluated would be gifted. Thus, a new screening process was developed for the 1976-77 school year.

With the new screening process, each teacher was asked to complete a roster of his/her students indicating which students possessed certain characteristics of giftedness. Teachers were asked to observe each child and then from a list of twelve characteristics, indicate whether the child possessed that

characteristic or not. Subsequently, the completed roster was reviewed with the school district personnel by the school psychologist. By mutual agreement, the students were chosen who would be evaluated. The desired effect was to reduce the number of children evaluated that in fact, were not gifted. The cooperation and improvement of "hit rate" varied from district to district; however, in those districts where the teacher appeared to conscienciously complete the roster, the effect was informally noted to be beneficial. In other instances, the need for further in-service regarding the characteristics of giftedness was indicated.

The list of twelve characteristics was used with the senior author's district with the kindergarten teachers for the 1976-77 school year. The usefulness of this list for kindergarten children was felt to be minimal. However, it did reduce the number of children evaluated. Of the 104 kindergarten children, 20 (19.23%) were referred for evaluation. 3 of the 20 (15%) were identified as gifted. The "hit rate" of one in two was not achieved.

The purpose of this article is to describe, in detail, a new kindergarten screening process utilized during the 1977-78 school year. It is based upon past research with pre-school gifted children, and the authors' own experiences.

POPULATION

Three school districts were selected for trial of the screening program. District A might be described as an affluent suburban area whose population is composed of a higher than average proportion of professional persons. District B is composed of a small rurally located town that also receives students from outlying farming areas and coal mining villages. District C is a small district, mainly rural i.e., farming or commuters, with few professional or affluent people living within the district.

Each school district had morning and afternoon kindergarten classes. In District A there were a total of 6 classes. In District B and C there were 4 classes in each.

PROCEDURES

Considering Herdman's (1977) research which suggested that the gifted kindergarten child typically demonstrates 1). advanced visual perception and fine motor coordination; 2). advanced abstract thinking ability; and 3). advanced conceptual knowledge, four instruments were chosen to assess these areas with special consideration being directed toward ease of administration by kindergarten teachers and the subsequent review by the authors. The instruments chosen were 1). Slosson Drawing Coordination Test (Slosson, 1963); 2). Goodenough Draw-A-Man Test (Goodenough, 1926); 3). Boehm Test of Basic Concepts (Boehm, 1971); 4). Teacher Checklists-Checklist for Kindergarten (Miley, undated).

The Slosson Drawing Coordination Test (SDCT) is composed of twelve developmentally arranged graphics. The subject is directed to copy each figure three times with subsequent performance rated as pass or fail. The instrument is designed so an average child of age five would complete only the first five designs, an average child of seven years the first seven and so forth. Since advanced visual perception and eye-hand coordination, as displayed by adequate drawing of a diamond, has been highly significant as an indication of mentally advanced kindergarten children, the examiner required all children to reproduce fingures one through nine. Figure seven is comparable to the Binet Diamond, (year level VII, 3) and figure nine is composed of three diamonds. The SDCT was administered as a group task following teacher demonstration of figure #1.

Teachers were asked to individually administer the Goodenough Draw-A-Man Test. Students were presented with primary pencil, white unlined 8½" x 11" paper and directed "Draw me a picture of a person, make it the best person you can. Draw the whole person, not just its head and shoulders." Particular care was taken to advise teachers to offer no help to the children. All drawings were rated with a mental age by the authors using standards detailed by Florence Goodenough (1926). Although, the authors recognize the advantages in accuracy of the updated norms offered by the revised and extended Goodenough-Harris Drawing Test (Harris, 1963), for screening and ranking purposes, the original system offered more speed and ease with seeming insignificant differences. The human figure drawing provided, in addition to a mental age rating, evidence concerning motor coordination as well as social maturity.

The Boehm Test of Basic Concepts is designed to assess vocabulary and language concept development. The test is composed of 50 items, 25 in each of 2 booklets. Forms A and B are available with Form B used in this project. Group administration was used and 15 to 20 minutes were required for each booklet. Students marked one of several distracters in answer to a concept presented orally by the teacher; e.g. "Mark the girl behind the chair". A raw score was derived from items passed.

The teacher checklist required a teacher rating of yes or no on 11 items Surveying 5 areas (a) language, (b) psychomotor ability, (c) mathematics, (d) creativity, and (3) general characteristics. Under the language category teachers were asked to use more than sight word recognition as a means of rating the pupil's ability to read. Following teacher rating, yes items were counted and the class ranked.

Participating kindergarten teachers were inserviced by the authors regarding purpose of the project and specific directions were provided for administration of the four instruments. A rotated design for administration was outlined, thus each teacher presented tests in a different order. Printed directions for administration provided with the Boehm Test were given to each teacher and reviewed. Directions for the other instruments were written and duplicated for teachers so standardization of administration might be achieved. The tests were administered in the spring of the school year.

Following administration, all materials were returned to the authors for scoring and ranking. During the ranking procedure particular attention was given to the performance of the younger kindergarten children. The authors have found that this group is frequently overlooked by teachers as there may be 15 months or more variation in the ages of children in any one kindergarten class. Considering the fact that the older child has more life experience and overall development, it is easy to see how older children are more frequently seen as the potential gifted candidate.

For ranking as a possible candidate the following criteria were used:

A. SDCT: ability to complete the diamond figure using Stanford-Binet scoring criterion.

B. Boehm: raw scores of 47 of 50 but 45 to 50 for the younger half of the population.

C. D.A.M.: mental age ratings 1½ years or above chronological age.

D. Teacher checklist: 9 yes items or more.

Based on the above criteria the children displaying qualifications on 2 of the first 3 standardized instruments were considered possible candidates. High ranking on the teacher checklist was then reviewed and those students meeting the criteria on 3 areas or more were considered best candidates.

In District B and C, the above criteria was not strictly adhered to because of the fewer than expected number of children demonstrating qualifications on 3 of the screening instruments.

Without access to the above results each teacher was asked to list children they would recommend on "opinion", as was done the previous years. Students who were not included in the ranking by the authors but recommended by teachers were included for individual evaluation as "test cases".

RESULTS

In District A, 33 of 155 kindergarten students (21.29%) were evaluated individually using the Stanford-Binet Intelligence Scale, Form L-M, Wide Range Achievement Test, and the Goodenough-Harris Draw-A-Man Test. In District B, 13 of 108 (12.04%) were evaluated. Two children were recommended for testing but parent permission was not received. In District C, 6 of 87 (6.90%) were evaluated. Fifteen (8 boys, 7 girls) of 33 (45.5%) evaluated in District A and 1 of 13 (8%) in District B qualified as mentally gifted using 130 I.Q. as a standard. No student in District C met the I.Q. of 130 requirement. The I.Q. range of those qualifying in District A was 130 to 151, with a median I.Q. of 137.5. In District B the I.Q. of the 1 boy qualifier was 131. The range of I.Q. non-eligible students in District A was 98 to 128 with a median I.Q. of 118. In District C the range was 107 to 129 with a median I.Q. of 109. No children evaluated as "test cases" qualified. In the District A group, 11 of 14 (79%) of the children displaying qualifications on 3 or more criteria later qualified as mentally gifted.

During the 1979 project in District A, screening was completed using the S.D.C.T., Boehm and D.A.M. The Checklist was omitted since teachers declined participation due to time limitations. Teacher observations were included following ranking by the guidelines of the 1978 project. Verbal observations of the teachers were used in place of checklist results to determine 36 recommendations for evaluation. Five additional children were added by school staff who were not listed by screening methods, bringing the total referrals to 41 (25.15%)of the kindergarten population). 29% (12) of the referrals were classified as mentally gifted when evaluated using the Stanford-Binet Intelligence Scale, Form L-M, and the Wide Range Achievement Test. The I.Q. range of gifted children was 132 to 149, with a median I.Q. of 135.5. The range of non-gifted (excluding one invalidated low I.Q. of 90) was 102 to 127, with a median I.Q. of 113.3. The median I.Q. of the five recommended for testing who were not identified in screening was 110.

In Districts B and C the revised teacher checklist was used, in addition to the above instruments. In District B, 13 children were selected using the screening methods and one (1) was added by teacher referral, bringing the total referrals to 14 (14.58% of the kindergarten population). 29% (4) of the referrals were classified as mentally gifted. The I.Q. range of the gifted children was 133 to 158+ with a median of 138. The range of non-gifted was 96 to 123 with a median of 108.5.

In District C, 5 (7%) children were selected for testing by the screening methods. Of the 5, zero (0) were indentified as gifted. The median I.Q. of the 5 was 110.

DISCUSSION

The screening method as outlined seems to offer a systematic method of reviewing cognitive development, language, and visual perception abilities for the purpose of identifying possible kindergarten candidates for programs for the mentally gifted. In District A 74% and in District B 62% of the children screened for individual evaluations later revealed mental abilities near the first standard deviation about the mean (I.Q. 116) or above. The number of likely candidates support using the method of screening as outlined.

Implied in the above was the reduction in the number of children evaluated that were unlikely candidates for gifted education program. Thus, these children were relieved from the oftentimes frustrating and embarrassing experience of responding to test items that would be much beyond their ability.

Evaluations completed in District A revealed 3 of the 15 children (20%) qualifying as mentally gifted, as absent from the list of potentially gifted based on teacher opinion alone. These children tended to be quiet, or in one case, less well developed in motor and readiness skills. This gives further support to an unbiased quantifiable screening procedure. No children qualified who did not rank highly on the established criteria. This information attests to the inaccuracy of teacher judgement alone as the selection method for candidates for individual evaluation and supports the work of Wallace (1965), Jacobs (1971) and Ryan (1975). Unfortunately, teacher referral is the primary method used in screening the potentially gifted children in the early grades.

The teacher checklist ranked 11 of the 15 (73rd %ile) in District A qualifying with 9 or more yes items. Seemingly, the more behaviorally measurable items in the language, psychomotor abilities and mathematics areas offered significant information for identification of advanced abilities. A danger in the checklist approach, which likens it to opinion, is the possibility that items will be checked without careful assessment of the behavior's accomplishment.

Moreover, during the 1979 project in District A, the twelve children classified as mentally gifted all had been jointly recommended by psychologist and teacher screening. If the three psychological instruments had been the only criterion used for selection, 75% of the total would have been identified with a median I.Q. of 120.5. This information seems to support the need for the teacher's inclusion in the screening process but also tends to increase the number of "false positives" or "no hit" referrals. In District A, all of the participating teachers had experience with identifying gifted children and had access to a list of behavioral characteristics common to mentally gifted children. As Borland (1978) suggests, providing direction to the teacher seems to increase the efficiency of the screening effort. Efficiency, in terms of this study, may best be defined as assuring identification of more gifted children, but at the expense of increased "no hit" referrals. It is the authors' opinion that although highly useful, rating scales inflate false positives due to the non-objective nature of the data.

In the present study, ability to read at a pre-primer level or beyond seemed to be a significant developmental feature suggesting advanced ability. In District A, 5 children were listed as "readers" and all 5 qualified as gifted. However Durkin (1966) has found in 2 studies that the I.Q. of early readers varied greatly (91-161, and 82-170). Evans (1976) found a close and unique

relationship between precocious reading and superior development of sound blending and visual memory for letters which is not associated with age or I.Q. Thus, further research appears needed before the reading accomplishment only can be judged as to its significance in predicting giftedness.

The authors feel that there is potential in expanding developmental items, listed in behavioral language, to compose a teacher screening device that might reduce the four instruments in the current screening program to one developmental checklist. This plan would need to include teacher inservice to stress behavioral observation techniques and informal testing of selected tasks. Future research in this area is needed. Through such research the time and cost factors, which can be significant, might be reduced drastically without overlooking identification of mentally advanced kindergarten aged youngsters.

As was mentioned previously, the criteria for ranking the kindergarten students in District B and C was not strictly adhered to. In evaluating more students as "test cases", the effectiveness of the screening procedure as outlined was supported. These observations indicate that in applying strict criteria, the psychologist using the screening procedure as outlined would be fairly confident in receiving referrals that are appropriate, i.e., most likely to be gifted children.

Based on the normal probability curve one would expect approximately 3% of any population to score within the gifted range of ability, i.e., 2 standard deviations above the mean. In the populations surveyed the authors have discovered, over a three year period, a variation from the normal distribution expectancy of 3%. In the case of District A approximately 10% qualify as gifted, in District B 5% and District C 1%. This expectancy percentage seems to remain somewhat consistent and although open to speculation, seems to be

related to the influence of heredity and environment within each school district. It would seem that these figures may be used for purposes of estimating the number of children who might be seen for individual evaluation. By doubling the expected percentage , it would appear that 1 of 2 children evaluated may qualify while maintaining reduced changes of missing a gifted student. For example, District A might refer 20% of its kindergarten population of 200 and of the 40, approximately 20 might be expected to qualify. Teacher opinion referrals after this procedure apparently would not increase the number identified as gifted.

The S.D.C.T. and D.A.M., which are non-language, seem to offer an attempt at a "culture fair" means of screening for advanced abilities in bilingual, quiet, disadvantaged, or learning disabled children. The D.A.M. in particular, is a device frequently used to assess disadvantaged children. In the current project, two gifted children who otherwise might have been overlooked, were identified.

An additional area needing further research, but already being examined by the authors, is the feasibility of using the same screening procedure as a means of identifying "high risk" or exceptional children other than gifted. Just as the developmentally advanced can be ranked, so it would seem, can the developmentally delayed. For example, during the 1978 study, in District C, six (6) children were identified as "high risk" for learning problems in first grade. Of the six (6), parent permission for an individual psychological evaluation was obtained on five (5) children. After the evaluation, two children were identified as being educable mentally retarded (EMR); one child scored within the average range intellectually, but had a history of ophthalmologic problems; and the other two children

scored intellectually within the slow learner range and had mild visual perceptual difficulties. Thus, from this procedure, clarification was received on these children and their progress in first grade has been followed.

In addition to screening the data collected during the 1979 project for potentially gifted children, efforts were made in District A to screen out children revealing high risk for academic failure. Sixteen children (9.82%) were isolated as "high risk" based on the S.D.C.T., Boehm Test of Basic Concepts and D.A.M. To date (44%) of the sixteen have been evaluated and all have been classified as exceptional using the Pennsylvania Standards. The subsequent classification results were four learning disabled, one educable mentally retarded and on hearing impaired. One of the sixteen was listed as a gifted candidate and also "high risk". This child was subsequently classified as gifted, but revealed notable motor delays. Referrals are currently under consideration for two other children. Results of high risk screening in District A support using the three instruments listed. Teacher observations provided further information to determine which children should finally be referred for psychological evaluation.

Also during the 1979 project, many children in District B were tentatively identified as "at risk" for learning problems in first grade. 5 children who were considered "most at risk" were referred to the guidance counselor for the initiation of referrals for complete psychological evaluations. To date 1 child has been evaluated and has been found to be educable mentally retarded.

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